S.F. Dept. of City Planning
California Academy of Sciences Improvement Project: Initial Study. Dec 26, 1986.

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DEPARTMENT OF CITY PLANNING

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NOTICE THAT AN ENVIRONMENTAL IMPACT REPORT IS DETERMINED TO BE REQUIRED

Date of this Notice: December 26, 1986

Lead Agency: City and County of San Francisco, Department of City Planning
450 McAllister Street - 6th Floor, San Francisco, CA 94102

Agency Contact Person: Ivan Christie **Telephone:** (415) 558-5261

Project Title: California Academy of Sciences Improvement Project 86.58E = Initial Study

Project Sponsor: California Academy of Sciences

Project Contact Person: Frank Talbot

Project Address: California Academy of Sciences, Golden Gate Park

Assessor's Block(s) and Lot(s): 1703, Lot 1

City and County: San Francisco

Project Description: California Academy of Sciences improvements, addition of 56,200 gsf of new floor area; enclosure of about 23,800 gsf of existing public area; and renovation of about 49,585 gsf of existing area. The project would not result in new construction outside the footprint of the existing facility; no additional park property would be occupied.

THIS PROJECT MAY HAVE A SIGNIFICANT EFFECT ON THE ENVIRONMENT AND AN ENVIRONMENTAL IMPACT REPORT IS REQUIRED. This determination is based upon the criteria of the Guidelines of the State Secretary for Resources, Sections 15063 (Initial Study), 15064 (Determining Significant Effect), and 15065 (Mandatory Findings of Significance), and the following reasons, as documented in the Environmental Evaluation (Initial Study) for the project, which is attached.

Please see attached Initial Study.

Deadline for Filing of an Appeal of this Determination to the City Planning Commission: January 6, 1987.

An appeal requires: 1) a letter specifying the grounds for the appeal, and;
2) a $35.00 filing fee.

Barbara W. Sahm

Barbara W. Sahm, Environmental Review Officer

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INITIAL STUDY
CALIFORNIA ACADEMY OF SCIENCES (86.58E)

I. PROJECT DESCRIPTION

The proposed project is the implementation of a Master Plan by the California Academy of Sciences for its facilities in Golden Gate Park (see Figure 1, p. 3).

The Master Plan would include construction of a three-story (plus basement) new west wing building which would replace the existing one-story building (Bird Hall); addition of two new stories to the existing one-story plus basement building (Science Hall); construction of a new linking hall over the loading area, linking the Life Through Time Exhibit with the Fish Roundabout; renovation of the ground floor and basement of Cowell Hall; enclosure of the entrance porch area at Cowell Hall; addition of bay windows (to house display exhibits) along the Life Through Time Exhibit corridor with aquarium support space below; renovation of the Blue Whale Courtyard (which would remain as an open air courtyard) and placement of a glass roof over the existing Central Courtyard to accommodate living natural history exhibits. The project is intended to provide space adequate to meet the public exhibit, visitor service and research collection requirements of the Academy into the 21st Century.

In total about 56,200 gsf would be newly constructed additional floor area; 23,800 gsf of existing public area would be enclosed and 49,585 gsf of existing area would be renovated or replaced (see Table 1, p. 2). The project would not result in construction outside the footprint of the existing facility; no additional park property would be occupied. Figure 2, p. 4, shows the ground floor plan of the Academy as it would be after implementation of the project. The site is located in Golden Gate Park (Lot 1 in Assessor's Block 1703) along the easterly edge of the Music Concourse. The de Young and Asian Art Museums are located across the Music Concourse from the Academy. The total site area of the Academy is 201,200 sq. ft.

TABLE 1: PROJECT CHARACTERISTICS

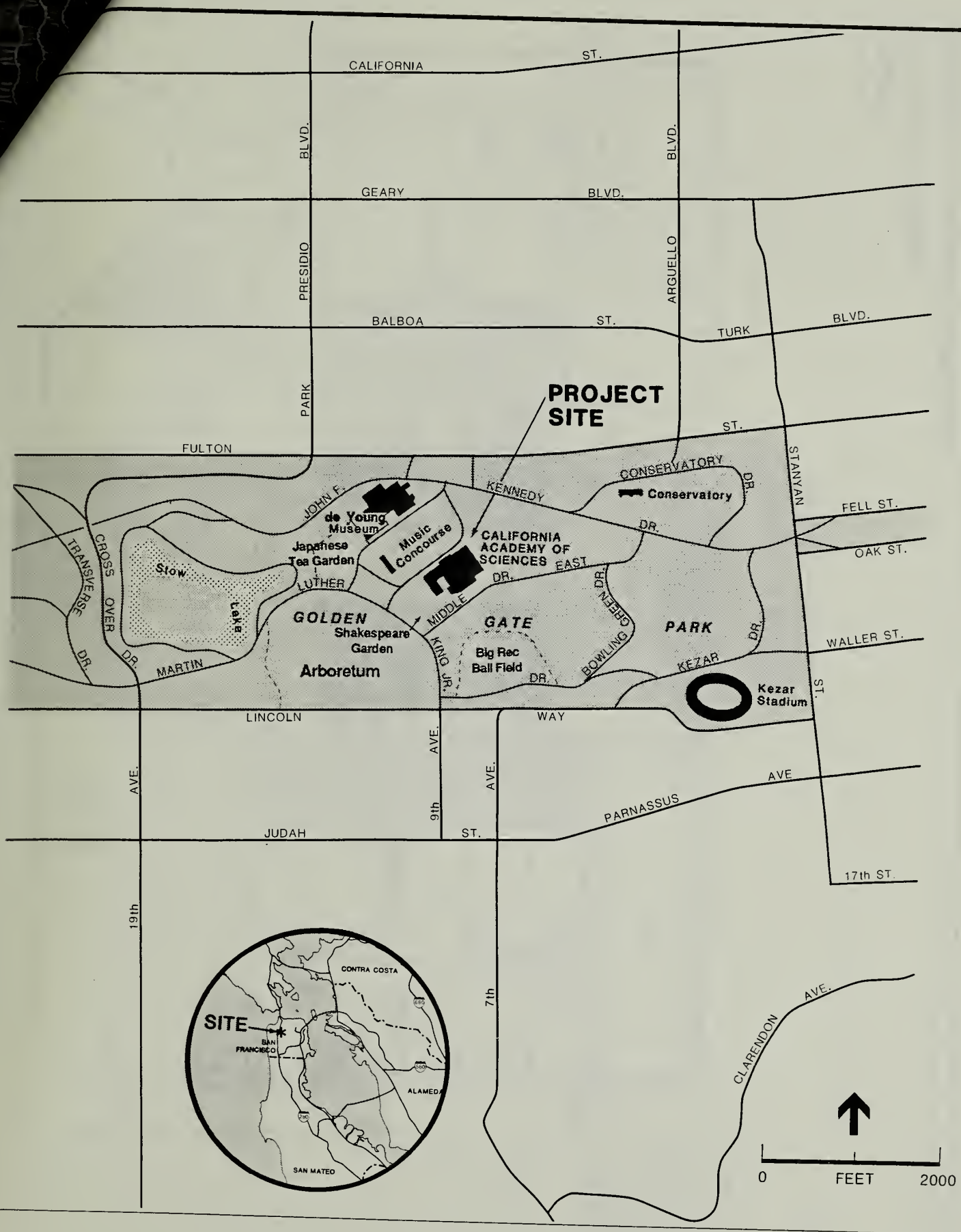
	Area (gsf)
Additional Floor Area	
Science Hall - 2nd and 3rd Floors	19,000
New West Wing (Replacing Bird Hall) - 2nd and 3rd Floors and Basement	26,800
Linking Hall Connecting Life Through Time Exhibit and Fish Roundabout	3,000
Mechanical and Storage Area under Central Courtyard	5,000
Bay Windows for Life Through Time Exhibit with Aquarium Support Space Below	2,400
	56,200
Existing Public Areas to be Enclosed	
Glass Enclosure of Entrance Porch at Cowell Hall	3,000
Glass Roof over Central Courtyard	20,800
	23,800
Existing Areas to be Renovated / Replaced	
Cowell Hall - Basement and 1st Floor	22,870
Science Hall - 1st Floor	9,915
Blue Whale Courtyard	9,300
New West Wing (Replacing Bird Hall) - 1st Floor	7,500
	49,585

SOURCE: California Academy of Sciences; and Robinson Mills & Williams.

The overall project, including reassignment of existing space and addition of new area would result in a 28% increase in space devoted to public exhibition, education and support; a 34% increase in area used by visitors and members (such as cafeteria space, etc.), a 16% increase in space for research collection and collection support, and a 16% increase in administrative office space. Overall, the project would result in a 22% increase in the gross floor area of the Academy facility (see Table 2, p. 5). The proportion of space assigned to each use would remain approximately the same.

Of the 80,000 gsf of newly enclosed and additional floor area, about 49% (39,100 gsf) would be for public exhibition, education space and support; about 26% (20,500 gsf) would be for visitor and member services; about 21% (17,000 gsf) would be for research collections and collection support; and about four percent (3,400 gsf) would be for administrative offices.

The project architect is Robinson, Mills and Williams, San Francisco.



SOURCE: ESA

FIGURE 1
LOCATION MAP
CALIFORNIA ACADEMY OF SCIENCES

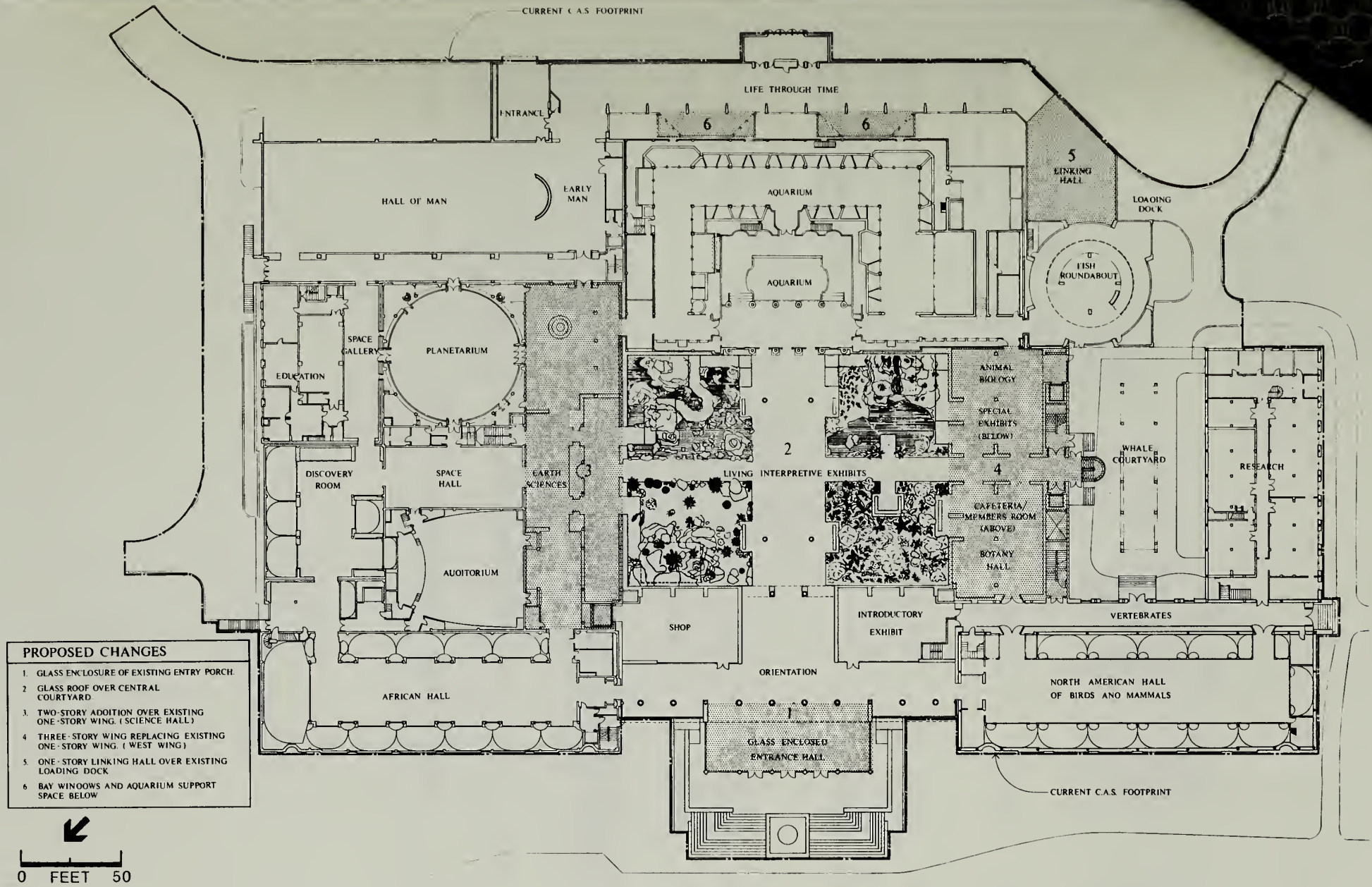


FIGURE 2
GROUND FLOOR PLAN
CALIFORNIA ACADEMY OF SCIENCES

SOURCE: ROBINSON MILLS & WILLIAMS

TABLE 2: MASTER PLAN PROGRAM

Program Uses	Existing/a/ Enclosed Area/GSF	New Program Areas: Existing Revised Area (GSF)/b/		New Program Areas: Existing Public Areas Enclosed & Additional Floor Area		New Program Areas: Total Enclosed Area After Project Completion	Percentage Increase Over Existing Area
ACADEMY PROGRAM USES							
Public Exhibition, Education Space, and Support	152,156	155,856	+	39,100	=	194,956	28%
Visitor & Member Services	21,274	7,926	+	20,500	=	28,426	34%
Research Collections Collection Support	165,874	175,522	+	17,000	=	192,522	16%
GENERAL & ADMINISTRATIVE SUPPORT USES							
Admin. Offices	21,356	21,356	+	3,400	=	24,756	16%
TOTALS /c/	360,660	360,660	+	80,000	=	440,660	22%

/a/ All existing areas are derived from "Workshop Document, Institutional/Operational Planning and Building Programming, California Academy of Sciences, San Francisco, California," by E. Verner Johnson and Associates, dated November, 1982. Total area includes basement in North American Hall (13,335 gsf).
/b/ Includes reassignment of uses in existing enclosed space.
/c/ All totals are gross square feet. Mechanical and building services are pro-rated among the areas described above.

SOURCE: California Academy of Sciences; and Robinson, Mills & Williams.

SUMMARY OF POTENTIAL ENVIRONMENTAL EFFECTS

A. EFFECTS FOUND TO BE POTENTIALLY SIGNIFICANT

The proposed project is examined in this Initial Study to identify potential effects on the environment. Some project-specific potential effects have been determined to be potentially significant, and will be analyzed in an environmental impact report (EIR). They include: the relationship of the project to the City Planning Code; visual quality and shadow impacts; and project-related and cumulative transportation.

B. EFFECTS FOUND NOT TO BE SIGNIFICANT

The following potential environmental impacts were determined either to be insignificant or have been mitigated to an insignificant level by measures included in the project. The following items require no further environmental analysis.

Land Use: The project would be an addition to an existing use. It would be compatible in use and scale with the surrounding park and facilities.

Light and Glare: No reflective glass would be used. The exterior of the new construction would be textured materials. These materials would not cause glare.

Population: The project would not displace people, housing or businesses. Approximately 22 new employees would be added to the existing Academy staff of about 200.

Noise: Construction activities within the Academy would result in a temporary increase in noise levels in and around the Academy facility. Project operation would not measurably increase existing noise levels in the project vicinity. Mitigation measures are proposed as part of the project, see p. 23.

Air Quality: Construction air quality impacts would be mitigated to an insignificant level (mitigation measures are proposed as part of the project, see p. 23). After project completion, impacts on air quality would not be measurable.

Public Services and Utilities: The increased demand for public services and utilities attributable to the project would not require additional personnel or equipment, and could be accommodated by existing services.

Biology: The project would not have a significant effect on plants or animals, displace any rare or endangered species, or result in the removal of any mature or scenic trees.

Geology/Topography: A detailed geotechnical report would be prepared for the project by a California-licensed engineer. The project sponsor and contractor would follow recommendations made in that report regarding building construction (see p. 24).

Water: The project would not degrade or deplete ground water resources, or cause flooding, erosion or siltation. Drainage patterns would not be altered. Measures to mitigate potential impacts associated with excavation and dewatering would be included in the project (see p. 24).

Energy/Natural Resources: The project would be designed and constructed to conform with the energy requirements of Title 24 of the California Administrative Code.

Cultural: The project would not conflict with preservation of any buildings of City landmark quality. There are no known archaeological or cultural remains in the project vicinity (see mitigation measure pp. 24 and 25).

Hazards: The project would not pose a hazard to people, animals or plant life. The Academy would review and update their evacuation and emergency response plan as necessary (see p. 24).

A. COMPATIBILITY WITH EXISTING ZONING AND PLANS	N/A	DISCUSSED
1. Discuss any variances, special authorization, or changes proposed to the City Planning Code or Zoning Map, if applicable.	X	_____
*2. Discuss any conflicts with the Master Plan of the City and County of San Francisco, if applicable.	X	_____

* Derived from State EIR Guidelines, Appendix C, normally significant effect.

*3. Discuss any conflicts with any other adopted environmental plans and goals of the City or Region, if applicable.	X	

The project would be compatible with existing zoning. The project is an expansion of existing uses on site. No new uses would be incorporated into the facility. The relationship of the proposed project to the policies of the Master Plan and provisions of the City Planning Code will be discussed in the EIR.

B. ENVIRONMENTAL EFFECTS	YES	NO	DISCUSSED
1. Land Use. Could the project:			
*a. Disrupt or divide the physical arrangement of an established community?		X	X
b. Have any substantial impact upon the existing character of the vicinity?		X	X

The Academy buildings are situated in the interior of Golden Gate Park such that the project site is buffered from the mainly residential areas that surround the park. Those residential neighborhoods that abut the park closest to the Academy include the Inner Sunset, Richmond and the Greater Haight. The project site is in a Public (P) use district and an Open Space (OS) height and bulk district. The proposed project consists of changes to an existing facility, which is a permitted use in a P district. These issues will be discussed further in the EIR.

2. Visual Quality. Could the project:	YES	NO	DISCUSSED
*a. Have a substantial, demonstrable negative aesthetic effect?		X	X
b. Substantially degrade or obstruct any scenic view or vista now observed from public areas?		X	X
c. Generate obtrusive light or glare substantially impacting other properties?		X	X

The project's appearance and possible effects on views will be discussed in the EIR.

* Derived from State EIR Guidelines, Appendix C, normally significant effect.

Mirrored glass would not be used in the project; the project would not generate any obtrusive light or glare. The project would not use mirrored, reflective or densely tinted glass (conforming to the City Planning Commission Resolution No. 9212). Light and glare will not be discussed further in the EIR.

3. Population. Could the project:	YES	NO	DISCUSSED
*a. Induce substantial growth or concentration of population?	__	X	X
*b. Displace a large number of people (involving either housing or employment)?	__	X	____
c. Create a substantial demand for additional housing in San Francisco, or substantially reduce the housing supply?	__	X	____

The project would create about 120 person-years of construction employment. The number of on-site construction workers would range from 25 to 85 at any one time. The Academy of Sciences currently employs 197 people at the project site; with the proposed changes, the Academy would add about 22 employees to its service staff, curatorial and scientific staff. This topic requires no further analysis and will not be discussed in the EIR.

4. Transportation / Circulation. Could the project:	YES	NO	DISCUSSED
*a. Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system?	__	X	X
b. Interfere with existing transportation systems, causing substantial alterations to circulation patterns or major traffic hazards?	__	X	X
c. Cause a substantial increase in transit demand which cannot be accommodated by existing or proposed transit capacity?	__	X	X
d. Cause a substantial increase in parking demand which cannot be accommodated by existing parking facilities?	__	X	X

* Derived from State EIR Guidelines, Appendix C, normally significant effect.

The proposed project could cause circulation problems and increases in traffic, transit and parking demand. The EIR will discuss traffic increases and movements as they relate to the question of the street network in the vicinity of the project, in particular the street network within the Golden Gate Park.

Increased employment and visitor activity at the site could increase demand on existing transportation systems. The number of pedestrians in the area could also increase. The project would not alter existing circulation patterns except during construction; its effects on circulation during construction will be discussed in the EIR. Localized transportation impacts of the project will be discussed in the EIR.

The cumulative transportation effects, if any, of development within Golden Gate Park and the surrounding area will be analyzed in the EIR.

5. Noise. Could the project:	YES	NO	DISCUSSED
*a. Increase substantially the ambient noise levels for adjoining areas?	__	X	X
b. Violate Title 25 Noise Insulation Standards, if applicable?	__	X	____
c. Be substantially impacted by existing noise levels?	__	X	____

Total construction time would be about 26 months (all portions of the project would not be constructed simultaneously). Construction noise levels would fluctuate depending on construction phase, equipment type and duration of use, distance between noise source and listener, and presence or absence of barriers between noise source and listener. Project construction noise would mainly affect the Academy staff and the visitors to the facility, and possibly animals within the Academy. Construction noise would not affect any other group of people on a regular basis. The nearest buildings to the Academy are the de Young and Asian Art Museums about 500 ft. away.

Construction noise can reach up to 89 dBA/1,2,3/ at a distance of 50 ft. from the source with no intervening structures or trees to attenuate the sound. In the case of the

* Derived from State EIR Guidelines, Appendix C, normally significant effect.

Academy, all construction would be in the interior of the Academy facility. Academy buildings would attenuate construction noise by 15 to 20 dBA. On the steps outside the Academy the noisiest construction phases (excavation and exterior finishing) could result in noise levels of about 75 dBA. In the Music Concourse, directly in front of the Academy, and in the Shakespeare Garden, immediately southwest of the Academy, noise levels could reach 70 dBA during the noisiest phases of construction. On the far side of the Music Concourse, infront of the de Young Museum, and infront of the Japanese Tea Garden, construction noise would not be audible over everyday background noise. The Academy has agreed that noisy construction activities would be suspended if there were a concert at the Music Concourse (see p. 23).

Project operation would not result in perceptibly greater noise levels than those existing in the area. The amount of traffic generated by the project during any hour of the day, and cumulative traffic increases at the time of project completion, would cause traffic noise levels to increase by less than one dBA. To produce a noticeable increase in environmental noise, a doubling of existing traffic volume would be required; traffic increases of this magnitude would not occur with anticipated cumulative development including this project.

Mechanical equipment generating 70 dBA could dominate the noise environment within about 100 ft. of the source. (Fixed source noise levels are not regulated in P Use Districts, and therefore there is no maximum nighttime noise limit in the project area.) The project engineer and architect would include design features in the building to limit mechanical equipment noise levels to 70 dBA. (See mitigation measures p. 23.)

Construction and operational noise require no further analysis and will not be included in the EIR.

NOTE - Noise

/1/ dBA is a measure of sound in units of decibels (dB). The "A" denotes the A-weighted scale, which simulates the response of the human ear to various frequencies of sound.

/2/ See Downtown Plan EIR (Vol. 1) Continuous Section IV.E. generally and Section IV.J., pp. IV.J.8-18. Increases of 1 dBA or less in environmental noise are not noticeable by most people outside a laboratory situation (National Academy of Science, Highway Research Board, Research Report No. 117 (1971)). (See also FHWA Highway Traffic Noise Prediction Model underlines, Report No. FHWA-RD-77-108, December 1978, p. 8,

garding doubling of traffic volumes producing increases of 3 dBA or more, which are oticed by most people.)

/3/ Bolt, Beranek and Newman, December 31, 1971, Noise from Construction Equipment and Home Appliances, U.S. Environmental Protection Agency.

6. Air Quality / Climate. Could the project:	YES	NO	DISCUSSED
*a. Violate any ambient air quality standard or contribute substantially to an existing or projected air quality violation?	__	X	X
*b. Expose sensitive receptors to substantial pollutant concentrations?	__	X	X
c. Permeate its vicinity with objectionable odors?	__	X	____
d. Alter wind, moisture or temperature (including sun shading effects), so as to substantially affect public areas, or change the climate either in the community or the region?	__	X	X

Upon completion, the project would affect air quality in two ways. Emissions would be generated by project-related traffic, and by combustion of natural gas for building space and water heating. Transportation sources would account for most project-related emissions.

The proposed project would generate up to about 1,100 vehicle trip-ends per day. Air quality impacts on local intersections and freeway on-ramps would not be measurable. The Bay Area Air Quality Management District (BAAQMD) considers that development generating less than 2,000 vte per day would not have a measurable impact on air quality and therefore does not recommend an air quality analysis for such developments. Project-generated emissions would be less than the threshold established by the BAAQMD.

The regional impact of the project would be due to the increase in vehicle miles traveled (VMT) associated with the project. Based upon the estimate of project trip generation and an average trip length of about 25 miles, the daily regional increase of VMT is estimated at 27,500. Using composite emission factors supplied by the California Air Resources Board and assuming an average trip speed of 20 miles per hour (mph), total regional

* Derived from State EIR Guidelines, Appendix C, normally significant effect.

TABLE 3: REGIONAL AUTOMOBILE EMISSIONS (in tons per day)/a/

Pollutant	2000 Project Emissions	2000 Total Regional Emissions	% Increase in 2000 Regional Emissions Due to Project
Carbon Monoxide	0.38	2,170	0.02
Hydrocarbons	0.04	560	0.007
Nitrogen Oxides	0.04	492	0.008

/a/ Based upon an increase of 27,500 vehicle miles traveled per day.

SOURCE: Environmental Science Associates, Inc.

emissions from project traffic have been estimated in Table 3, above. No measurable impact on regional air quality would be expected due to the quantities of pollutants which would be generated by the project in comparison with regional totals.

Potential shadowing impacts of the project on open space within Golden gate Park will be discussed in the EIR. The analysis will include shadow diagrams. The project would not be subject to Proposition K (the Park Shadow Ban Ordinance) as it would be constructed on property under the jurisdiction of the Recreation and Park Department, for Recreation and Park related purposes, and would thus be exempt (City Planning Code Section 295)./1/

NOTE - Shadow

/1/ A shadow analysis for the project is on file and available for public review at the Department of City Planning, Office of Environmental Review, 450 McAllister St., San Francisco.

7. Utilities / Public Services. Could the project:	YES	NO	DISCUSSED
*a. Breach published national, state or local standards relating to solid waste or litter control?	__	X	____

* Derived from State EIR Guidelines, Appendix C, normally significant effect.

		YES	NO	DISCUSSED
*b.	Extend a sewer trunk line with capacity to serve new development?	__	X	____
c.	Substantially increase demand for schools, recreation or other public facilities?	__	X	X
d.	Require major expansion of power, water, or communications facilities?	__	X	X

The project would not increase the demand for schools, recreation or other public facilities since the Academy is an educational/recreational use. The proposed project would increase demand for and use of public services and utilities on the site, but not in excess of amounts expected and provided for in the project area. The providers of utilities and public services have been contacted and have responded that they have adequate capacity to serve the project and would not require additional personnel or equipment. Responses from these service providers are available for public review at the Department of City Planning, Office of Environmental Review, 450 McAllister St.

8. Biology. Could the project:		YES	NO	DISCUSSED
*a.	Substantially affect a rare or endangered species of animal or plant or the habitat of the species?	__	X	____
*b.	Substantially diminish habitat for fish, wildlife or plants, or interfere substantially with the movement of any resident or migratory fish or wildlife species?	__	X	X
c.	Require removal of substantial numbers of mature, scenic trees?	__	X	____

Because the proposed addition to the Academy would occur within the existing footprint of the facility, no wildlife or plant habitats would be substantially affected by the project. This topic will not be discussed in the EIR.

9. Geology / Topography. Could the project:		YES	NO	DISCUSSED
*a.	Expose people or structures to major geologic hazards (slides, subsidence, erosion and liquefaction)?	__	X	X

* Derived from State EIR Guidelines, Appendix C, normally significant effect.

b.	Change substantially the topography or any unique geologic or physical features of the site?	_	X	X

The project site is between 230 ft. to 250 ft., San Francisco City Datum (SFD)./1/ Soils at the site are composed of two to six feet of manmade fill deposits which are supported by an extensive sand dune deposit varying from medium dense to very dense with depth./2/ Groundwater levels are expected to be below 220 ft. SFD./3/. The foundation would have spread footings. The new basement beneath Bird Hall would be about 12 ft. below ground level; dewatering is not expected to be required.

The closest active faults to San Francisco are the San Andreas Fault, about nine miles southwest of Downtown, and the Hayward and Calaveras Faults, about 15 and 30 miles east of Downtown, respectively. The project area would experience very strong (Intensity Level C, masonry badly cracked with occasional collapse, frame buildings lurch when on weak underpinning with occasional collapse) groundshaking during a major earthquake./4/ Parts of the project would replace buildings on the site built prior to current seismic code standards and therefore generally more susceptible to earthquake damage. The site is not within an area of liquefaction or subsidence. It is not within an area of potential tsunami or seiche flooding./5/

The project sponsor would follow the recommendations of structural and foundation reports to be prepared for any excavation and construction on the site. The building must meet current seismic engineering standards of the San Francisco Building Code which include earthquake-resistant design and materials. The Code is designed to allow for some structural damage to buildings but not collapse during a major earthquake. The Academy already has an emergency response plan; this plan would be reviewed and updated as necessary (see mitigation measure, p. 24).

This topic requires no further analysis in the EIR.

NOTES - Geology, Hydrology, Seismology

/1/ San Francisco City Datum establishes the City's "0" point for surveying purposes at approximately 8.6 feet above mean sea level.

/2/ Dames and Moore, Foundation Investigations, Proposed Additions, California Academy of Sciences, June 13, 1973.

/3/ Ibid.

/4/ URS/John A. Blume and Associates, San Francisco Seismic Safety Investigation, 1974. Groundshaking intensities that would result from a major earthquake were projected and classified on a five-point scale ranging from E (weak) through A (very violent).

/5/ Ibid.

10. Water. Could the project:	YES	NO	DISCUSSED
*a. Substantially degrade water quality, or contaminate a public water supply?	__	X	____
*b. Substantially degrade or deplete ground water resources, or interfere substantially with ground water recharge?	__	X	X
*c. Cause substantial flooding, erosion or siltation?	__	X	____

The project would not affect drainage patterns or water quality because the site is now entirely covered with impermeable surfaces. Dewatering of the site is not expected to be necessary. No further analysis of this topic is required in the EIR.

11. Energy / Natural Resources. Could the project:	YES	NO	DISCUSSED
*a. Encourage activities which result in the use of large amounts of fuel, water, or energy, or use these in a wasteful manner?	__	X	X
b. Have a substantial effect on the potential use, extraction, or depletion of a natural resource?	__	X	____

Annual energy consumption by existing uses on the site, museum/exhibition and office is 3.56 million kWh of electricity and 180,000 therms of natural gas, equal to about 54.4 billion Btu at the source./1,2/

Removal of existing structures would require an unknown amount of energy. Fabrication and transportation of building construction would require about 100 billion Btu of gasoline, diesel fuel, natural gas, and electricity./3/ Distributed over the estimated 50-year life of the project, this would be about 2.0 billion Btu per year, or about 20% of annual building energy requirements.

* Derived from State EIR Guidelines, Appendix C, normally significant effect.

New buildings in San Francisco are required to conform to energy conservation standards specified by Title 24 of the California Administrative Code. Documentation showing compliance with these standards is submitted with the application for the building permit and is enforced by the Bureau of Building Inspection.

Table 4, below, shows the estimated operational energy which would be used by the project. Project demand for electricity during PG&E's peak electrical load periods, July and August afternoons, would be about 370 kW, an estimated 0.002% of the PG&E's peak

TABLE 4: ESTIMATED PROJECT ENERGY USE/a/

Daily Natural Gas Consumption/b/	
Estimated natural gas consumption per sq. ft.	55 Btu/c/
Estimated peak daily natural gas consumption	1,220 Therms
Monthly Electric Consumption/b/	
Estimated electrical consumption per sq. ft.	1.16 kWh (11,900 Btu/d/
Estimated total electrical consumption	73,174 kWh (750 million Btu)
Annual Consumption	
Estimated total annual natural gas consumption	12,600 Therms
Estimated total annual electrical consumption	878,100 kWh (9.0 billion Btu)
Connected kilowatt load	399 Kilowatts
Estimated total annual energy consumption	10.25 billion Btu (1,830 barrels of oil)

/a/ Energy use includes space conditioning, service water heating and lighting in accordance with allowable limits under Title 24. Estimated electricity includes an additional 3 kWh/sq.ft./yr., consumed by appliances such as tyepwriters, computers, coffee makers, etc. than assumed by Title 24 estimates.
/b/ These calculations are available for review at the Office of Environmental Review, 450 McAllister Street, San Francisco, California.
/c/ Btu (British thermal unit): A standard unit for measuring heat. Technically, it is the quantity of heat required to raise the temperature of one pound of water 1 degree Fahrenheit (251.97 calories) at sea level.
/d/ Energy Conversion Factors:

one gallon gasoline	=	125,000 Btu
one kilowatt (kw)	=	10,239 Btu
one therm	=	100,000 Btu
one barrel oil	=	5,600,000 Btu

SOURCE: Flack & Kurtz Consulting Engineers

ad of 16,000 MW./4/ Project demand for natural gas during PG&E's peak natural gas load periods, January mornings, would be 25 cu.ft. per day, or about 0.0007% of PG&E's peak load of about 3.3 million cu. ft. per day./4/ Annual and peak daily electricity and natural gas consumption are shown in Figures 3 and 4, pp. 19 and 20.

San Francisco's electricity requirements are expected to be about five billion kWh per year by 2000, an increase of about 32% from 1984. Natural gas consumption is expected to be 35 billion cu. ft. annually by 2000, the same as in 1984./5/

Increased San Francisco energy demands to the year 2000 would be met by PG&E from nuclear sources, oil and gas facilities, hydroelectric and geothermal facilities, and other sources such as cogeneration, wind and imports. PG&E plans to continue receiving most of its natural gas from Canada and Texas under long-term contracts. Energy will not be discussed further in the EIR.

NOTES - Energy

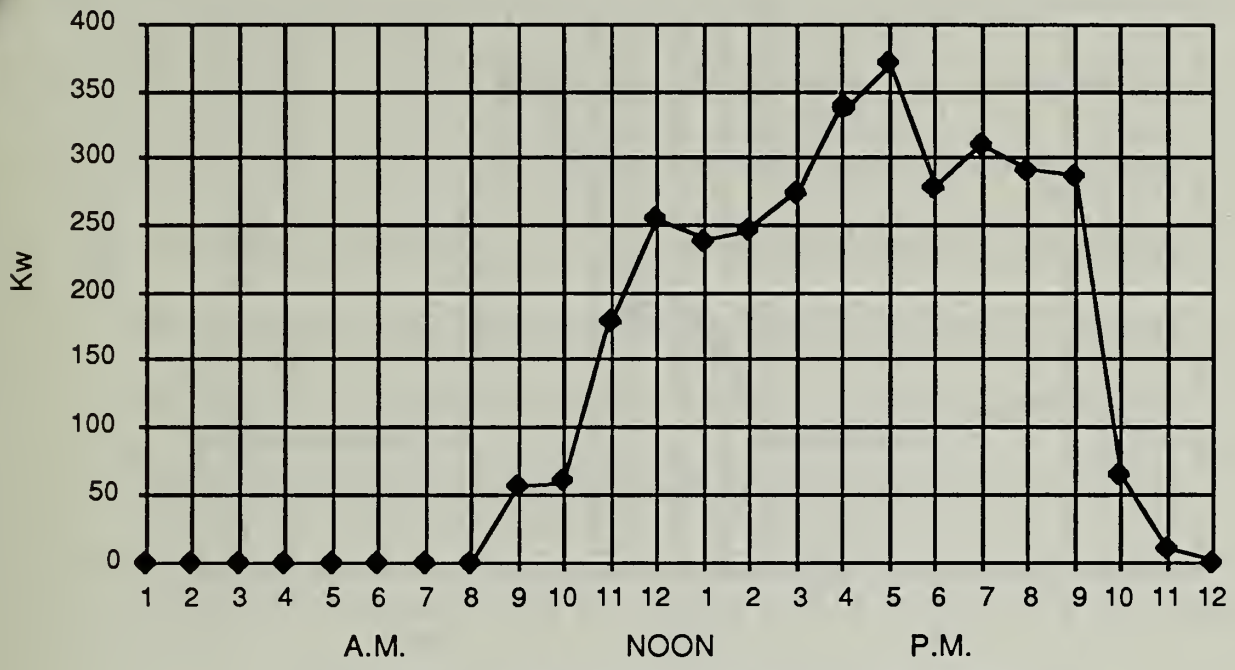
/1/ Existing energy use is based on PG&E customer billings for 1983; at-source thermal energy, given in British thermal units (Btu), is based on information received from PG&E, Technical Service Department, May 10, 1984.

/2/ The British thermal unit (Btu) is the quantity of heat required to raise the temperature of one pound of water one degree Fahrenheit at sea level. The term "at-source" means that adjustments have been made in the calculation of the thermal energy equivalent (Btu) for losses in energy that occur during generation, transmission, and distribution of the various energy forms as specified in: ERCDC, 1977, Energy Conservation Design Manual for New Non-Residential Building, Energy Conservation and Development Commission, Sacramento, California, and Apostolos, J.A., W.R., Shoemaker, and E.C. Shirley, 1978 Energy and Transportation System, California Department of Transportation, Sacramento, California, Project #20-7, Task 8. All references to Btu in this report are at-source values.

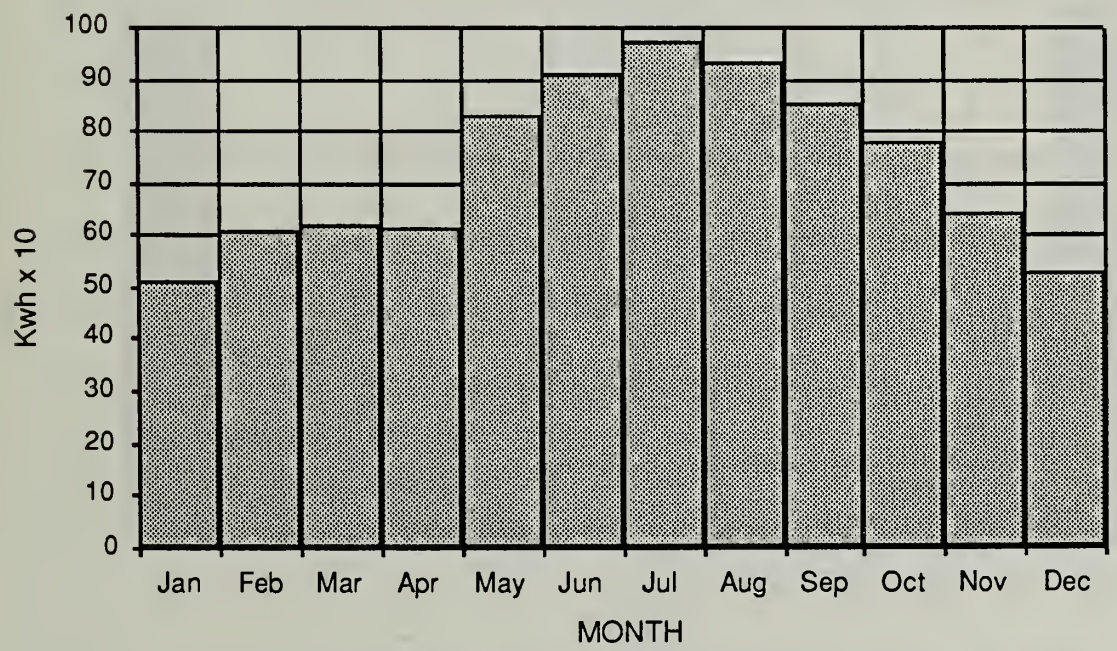
/3/ Hannon, B., et al., 1978, "Energy and Labor in the Construction Sector," Science 202:837-847.

/4/ San Francisco Department of City Planning, Downtown Plan Environmental Impact Report (EIR), EE81.3, certified October 18, 1984, Vol. 1 pp. IV.G.3-4. (Note: one cu. ft. = 1,100 Btu)

/5/ Ibid; p. IV.G.12.



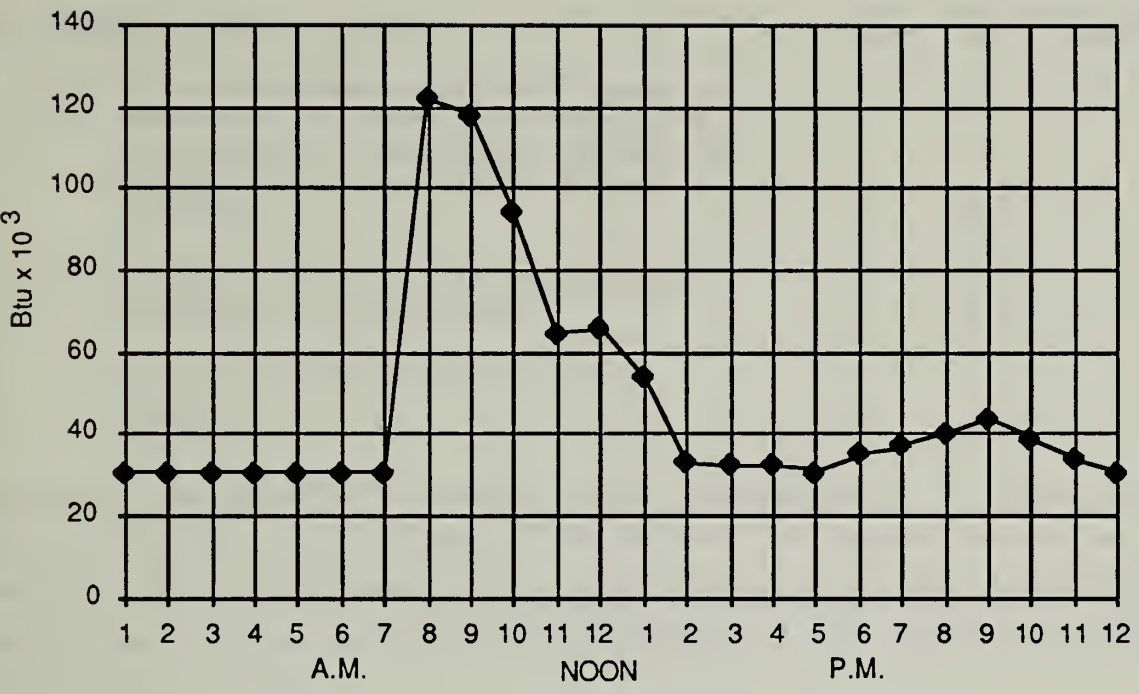
PEAK DAY ELECTRICAL DEMAND BY HOUR



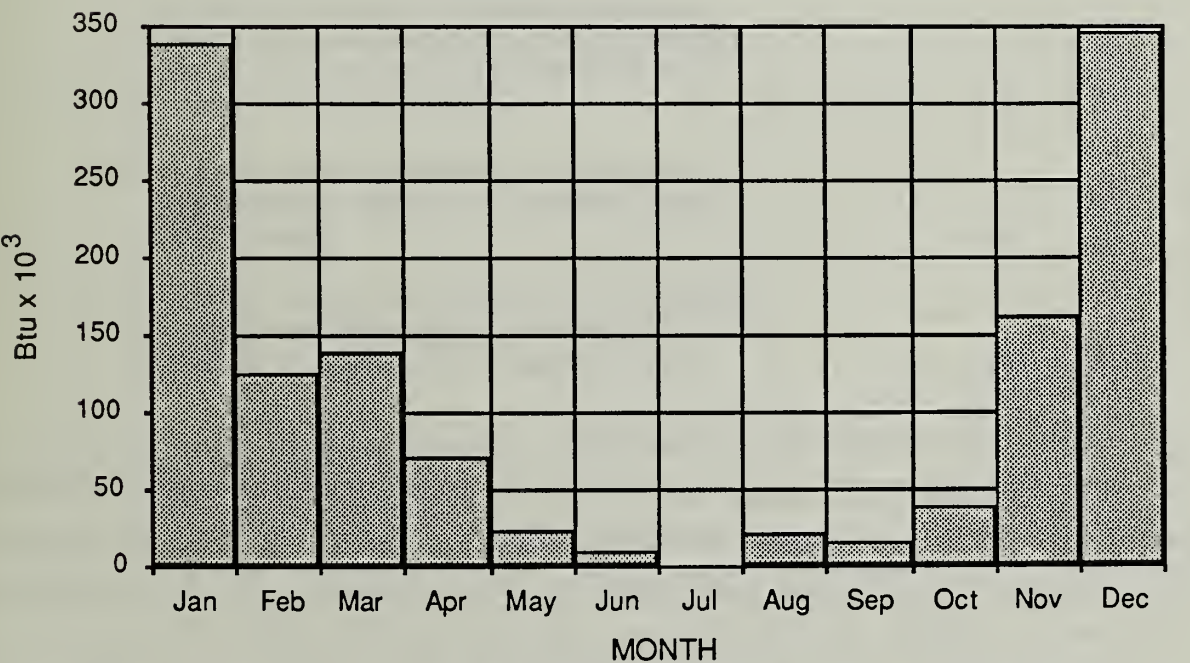
ANNUAL CONSUMPTION OF ELECTRICITY BY MONTH

FIGURE 3
ELECTRICITY–PEAK DAY DEMAND
AND ANNUAL CONSUMPTION

SOURCE: FLACK & KURTZ CONSULTING ENGINEERS



PEAK DAY NATURAL GAS DEMAND BY HOUR



ANNUAL CONSUMPTION OF NATURAL GAS BY MONTH

FIGURE 4
NATURAL GAS PEAK DAY AND
ANNUAL GAS LOAD DISTRIBUTION

SOURCE: FLACK & KURTZ CONSULTING ENGINEERS

12. Hazards. Could the project:	YES	NO	DISCUSSED
*a. Create a potential public health hazard or involve the use, production or disposal of materials which pose a hazard to people or animal or plant populations in the area affected?	__	X	____
*b. Interfere with emergency response plans or emergency evacuation plans?	__	X	X
c. Create a potentially substantial fire hazard?	__	X	____

The proposed project could result in a greater number of people on the site, which could increase the difficulty of evacuating people from the site if an emergency evacuation were required. The existing Academy evacuation and emergency response plan would be reviewed and updated as necessary (see mitigation measure, p. 24). Thus, this topic will not be discussed in the EIR.

13. Cultural. Could the project:	YES	NO	DISCUSSED
*a. Disrupt or adversely affect a prehistoric or historic archaeological site or a property of historic or cultural significance to a community or ethnic or social group; or a paleontological site except as a part of a scientific study?	__	X	X
*b. Conflict with established recreational, educational, religious or scientific uses of the area?	__	X	X
c. Conflict with preservation of any buildings subject to the provisions of Article 10 or Article 11 of the City Planning Code?	__	X	X

An Act to provide for the improvement of public parks in the City of San Francisco was approved on April 4, 1870; thus Golden Gate Park was begun. The Academy of Sciences was founded in 1853. On November 15, 1910, a charter amendment was passed, allowing construction of the first Academy facility in Golden Gate Park. The existing Bird Hall was constructed in 1916; Steinhart Aquarium opened in 1923, African Hall in 1934, and Morrison Planetarium in 1952. The California Academy of Sciences is listed in the California Inventory of Historic Places./1/

* Derived from State EIR Guidelines, Appendix C, normally significant effect.

There is no evidence of archaeological or cultural remains in the project area. Prior to the creation and initial development of Golden Gate Park, this area of San Francisco was primarily sand dunes. Such environments were not extensively used by prehistoric people; there is low possibility of prehistoric cultural remains./1/

The proposed additions to the Academy are intended to improve the existing facility by increasing space for exhibits, visitor services, and research collections and support and improve the educational and recreational opportunities available to the community. The project would not conflict with the preservation of any buildings subject to the provisions of Article 10 of the Planning Code because the structure to be demolished is not a designated City landmark.

The project would involve new excavation to a depth of about 12 ft. beneath the new West Wing (Bird Hall); there is currently no basement beneath Bird Hall. There are basements of similar depth to the proposed basement, beneath both Cowell Hall and Science Hall. The project includes measures to mitigate potential impacts on any cultural resources (see pp. 24 and 25).

NOTE - Cultural

/1/ Christian Gerike, Assistant Coordinator and Brian F. Terhorst, Researcher I, California Archaeological Inventory, Northwest Information Center, Department of Anthropology, Sonoma State University, letter, dated June 13, 1986.

C. OTHER	YES	NO	DISCUSSED
Require approval of permits from City Departments other than Department of City Planning or Bureau of Building Inspection, or from Regional, State or Federal Agencies?	__	X	____

The project would require approval from the Recreation and Park Commission, the Art Commission and the Board of Supervisors.

D. MITIGATION MEASURES	YES	NO	N/A	DISCUSSED
1. If any significant effects have been identified, are there ways to mitigate them?	__	__	X	X
2. Are all mitigation measures identified above included in the project?	X	__	X	X

The following mitigation measures are proposed as part of the project.

Construction Noise

- The construction contract would require that the project contractor muffle and shield intakes and exhausts, shroud or shield impact tools, and use electric-powered rather than diesel-powered construction equipment, as feasible, so that noise would not exceed limits stated in the City's Noise Ordinance (Article 29, San Francisco Administrative Code, 1972).

- The project sponsor would require the general contractor to construct barriers around the site, and around stationary equipment such as compressors, which would reduce construction noise by as much as five dBA, and to locate stationary equipment in pit areas or excavated areas, as these areas would serve as noise barriers.

- Construction activity which would generate a noise level in excess of 70 dBA, on the steps outside the Academy, would be suspended during any concerts in the Music Concourse.

Construction Air Quality

- The project sponsor would require the general contractor to sprinkle demolition sites with water continually during demolition activity; sprinkle unpaved construction areas with water at least twice per day to reduce dust generation by about 50%; cover stockpiles of soil, sand, and other such material; cover trucks hauling debris, soil, sand, or other such material; and sweep streets surrounding demolition and construction sites at least once per day to reduce TSP emissions. The project sponsor would require the general contractor to maintain and operate construction equipment so as to minimize exhaust emissions of TSP and other pollutants, by such means as a prohibition on idling motors when equipment is not in use or when trucks are waiting in queues, and implementation of specific maintenance programs (to reduce emissions) for equipment that would be in frequent use for much of a construction period.

Geology/Topography

- A detailed foundation and structural design study would be conducted for the proposed changes by a California-licensed structural engineer and a geotechnical consultant. The project sponsor would follow the recommendations of these studies during the final design and construction of the project.

Energy

- The newly enclosed Central Courtyard would maintain a constant temperature by using a constant volume system with economizer. Heating and cooling would be supplied to the lower ten feet of space only. Above a height of ten feet, the air would be allowed to stratify. Exhaust fans would release hot air at the top of the atrium. In warm weather, outside air would be used for ventilation and cooling. In cold weather, hot air would be recirculated.

Hazards

- The Academy would review and update their evacuation and emergency response plan as necessary. The plan would be reviewed by the Mayor's Office of Emergency Services.

Cultural

- Should evidence of cultural or historic artifacts of significance be found during project excavation, the Environmental Review Officer (ERO) and the President of the Landmarks Preservation Advisory Board would be notified immediately, and any excavation which could damage such artifacts halted. The project sponsor would select an archaeologist or other expert to help the Office of Environmental Review determine the significance of the find and whether feasible measures, including appropriate security measures, could be implemented to preserve or recover such artifacts. The ERO would then recommend specific mitigation measures, if necessary.

Copies of reports prepared according to this mitigation measure would be sent to the California Archaeological Site Survey Office at Sonoma State University. Excavation or construction that might damage the discovered cultural resources would be suspended for a maximum of four weeks (cumulatively for all instances that the ERO has required a delay in excavation or construction) to permit inspection, recommendation and retrieval, if appropriate.

E. ALTERNATIVES

A. No Project: The Academy would remain in its existing condition.

B. Smaller Project: Addition of approximately one-half the area proposed in the project.

C. Larger Project: Addition of more exhibit space than is proposed in the project.

D. Moving Academy entirely out of Golden Gate Park, to a new facility.

E. Removal of research and administrative uses from Golden Gate Park and renovating space currently used for these uses for exhibit space.

These alternatives and their potential impacts will be discussed in the EIR.

F. MANDATORY FINDINGS OF SIGNIFICANCE	YES	NO	DISCUSSED
*1. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or pre-history?	_	X	_____

* Derived from State EIR Guidelines, Appendix C, normally significant effect.

*2. Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals?	_	X	_____
*3. Does the project have possible environmental effects which are individually limited, but cumulatively considerable? (Analyze in the light of past projects, other current projects, and probable future projects.)	_	X	_____
*4. Would the project cause substantial adverse effects on human beings, either directly or indirectly?	_	X	_____
*5. Is there a serious public controversy concerning the possible environmental effect of the project?	_	X	_____

* Derived from State EIR Guidelines, Appendix C, normally significant effect.

G. ON THE BASIS OF THIS INITIAL STUDY:

___ I find the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared by the Department of City Planning.

___ I find that although the proposed project could have a significant effect on the environment, there WILL NOT be a significant effect in this case because the mitigation measures, numbers ___ in the discussion, have been included as part of the proposed project. A NEGATIVE DECLARATION will be prepared.

X I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

Barbara W. Sahm

Barbara W. Sahm
Environmental Review Officer

for

Dean L. Macris
Director of Planning

Date: 12/22/76

STATE AGENCY

Northwest Information Center
California Archaeological Inventory
Christian Gerike

CITY AND COUNTY OF SAN FRANCISCO

Felix Warburg
Art Commission

Stanley Eichelbaum
Art Commission

Anna-Marie Metwallay
Art Commission

George Rockrise
Art Commission

Vernon Alley
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Art Commission

Eugene L. Friend
Recreation & Park Commission

Amy Meyer
Recreation & Park Commission

Keith Eickman
Recreation & Park Commission

Tommy Harris
Recreation & Park Commission

Ralph Hurtado
Recreation & Park Commission

Frances M. McAteer
Recreation & Park Commission

Jeffrey K. Mori
Recreation & Park Commission

Fred Rodriguez
Recreation & Park Commission

Mary Burns
General Manager, Rec. & Park Dept.

Ms. Deborah Learner
Recreation & Park Department

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Haight-Ashbury Neighborhood Assoc.

David Veale
Haight-Ashbury-Neighborhood Assoc.

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John Holtzclaw, President

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Jan Holloway

Esther Marks

Edith Fried
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Zach Cowan
SFT, Open Space Committee

Jean Kortum
SFT, San Francisco Landmarks Board

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